REMARKS

Applicant wishes to thank the Examiner for the indication that the subject matter of Claims 2, 3, 5 and 7 contain allowable subject matter. All of Claims 1, 4, 6 and 8 have been rejected as unpatentable over the art. Claims 1 and 4 have been rejected as identically disclosed in Jamal et al. U.S. Patent No. 5,930,366. Claims 1, 4, 6 and 8 have been rejected as identically disclosed in Nystrom et al. U.S. Patent No. 6,526,091.

The Jamal reference does not disclose or suggest its invention as recited in the pending claims. Jamal discloses a pilot synchronization channel structure, where a pilot code $\bar{c}_p$ and combined code $\bar{c}_{s/ki}$ are simultaneously transmitted and overlapped to obtain both a frame timing indication and a long code indication during the cell searching process. The pilot code $\bar{c}_p$ is PSC (a primary synchronization code), and the combined code $\bar{c}_{s/ki}$ is SSC (a secondary synchronization code). The pilot synchronization channel comprises two signals which are a PSC signal and a SSC signal, wherein the PSC acts as the pilot code. The pilot synchronization channel structure is in substance a synchronization channel without an overlapping pilot channel. Therefore, there are not any extra pilot channels overlapping on the synchronization channel in the pilot synchronization channel structure.

In sharp contrast thereto, the invention decreases the complexity of the system channel estimation and increases channel estimation accuracy under fast moving situations so that physical layer measurement can be conveniently implemented and the channel utilization can be increased.

The invention includes a pilot synchronization channel structure for code division multiple access communication systems, comprising:

a synchronization channel (SCH) defined in wideband code division multiple access (WCDMA) protocol;

and a pilot channel overlapping the synchronization channel (SCH);

wherein the pilot channel comprises data frames comprising p time slots: and wherein each time slot is packed with m pre-selected pilot symbols after spread spectrum and scrambling, wherein m and p are positive integers.

The synchronization channel (SCH) comprises primary synchronization code (PSC) and secondary synchronization code (SSC) because the synchronization channel is defined in wideband code division multiple access (WCDMA) protocol. A pilot channel overlapping on the synchronization channel means the pilot is overlapped on PSC and SSC; in other word, there are three signals in the pilot synchronization channel structure, which comprises a PSC signal, a SSC signal, and a pilot signal. Claim 1 of the invention recites an extra pilot channel overlapping on the synchronization channel in the pilot synchronization channel structure.

Furthermore, in the Jamal reference, the pilot code is sent with a known modulation and without any long code scrambling or short Walsh type codes spreading, as described in column 2, lines 48-50 and in column 12, lines 48-50. In contrast, in the invention as described by Applicants, pilot symbols are spread and scrambled, namely, each time slot is packed with *m* pre-selected pilot symbols after spread spectrum and scrambling to harmonize WCDMA and CDMA 2000.

By applying the common pilot signal, other channels may not transmit dedicated pilot symbols. More data can be transmitted during the same periods of time, which increases the channel utilization and data rate. The channel structure of the invention can be used to execute the physical measurement simply and conveniently for cell search, handoff and power control.

The Nystrom reference discloses a synchronization channel structure comprising a primary synchronization code (PSC) and a secondary synchronization code (SSC), both of which are transmitted once per slot. The PSC and SSC are illustrated as transmitted simultaneously.

Although the Nystrom reference discloses that the PSC is overlapped on the SCH, it is noted that the PSC is used for synchronization but not being used for pilot code and channel estimation, and there are no extra pilot channels overlapping on the synchronization channel in the invention. Furthermore, in Nystrom, each time slot may be *m* PSC but without spread spectrum and scrambling, whereas in the invention, there is an extra pilot channel overlapping on the synchronization channel and each time the slot is packed with *m* pre-selected pilot symbols after spread spectrum and scrambling. Thus, Nystrom does not identically disclose or suggest the invention as recited in the pending claims whether considered alone or in combination with the Jamal reference.

It is respectfully submitted that all of pending Claims 1 through 8 are now in condition for allowance and an indication of allowability of the claims is solicited.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

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I hereby certify that this paper is being facsimile transmitted to the U. S. Patent and Trademark Office at Fax No. (703) 872-9306 on the date shown below.

Grace R. Rippy

August 26, 2004
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